

IN THE CLAIMS

1 -18. (canceled)

19. (currently amended) A ~~vehicle, comprising a transmission system (1) according to claim 2, which vehicle is a vehicle driven by human force~~ bicycle comprising:

a bicycle frame (5) and two bicycle wheels;

a drive chain wheel (2) to be driven by a user by means of pedals, the drive chain wheel (2) being rotatably mounted to the frame (5);

a driven chain wheel (3), rotatably mounted to the frame (5) and coupled to one of the bicycle wheels;

a coupling chain (4) engaging both chain wheels (2, 3) and having a first chain half (4C) and a second chain half (4D); and

a tension difference measuring device (6) for providing an output measurement signal which is representative for the torque transmitted by the coupling chain (4);

wherein the tension difference measuring device (6) comprises:

a supporting arm (20) fixed with respect to the bicycle frame (5);

a chain-contacting sensor member (10), arranged within the span of the coupling chain (4) between the drive chain wheel (2) and the driven chain wheel (3), the sensor member (10) having a first contact face (11) in force-transmitting contact with an inner side of the first chain half (4C) such as to receive from the first chain half (4C) a first transverse force (F_{DC}) and having a second contact face (12) in force-transmitting contact with an inner side of the second chain half (4D) such as to receive from the second chain half (4D) a second transverse force (F_{DD}) so that the sensor member (10) is loaded with the force difference between the first and second transverse forces (F_{DC} , F_{DD}), the sensor member (10) being implemented as a wheel rotatably mounted to the supporting arm (20) such as to rotate along with the moving chain (4); and

a deformation measuring sensor (30) mounted to the supporting arm (20) for measuring a deformation of the supporting arm (20) as caused by a displacement of the

chain-contacting sensor member (10), which in turn is caused by the force difference, the measuring sensor (30) providing an electric measurement signal (S_M) proportional to the deformation of the supporting arm (20), which measurement signal (S_M) is the output measurement signal of the tension difference measuring device (6).

20. (currently amended) A training device, ~~comprising a transmission system (1) according to claim 2, which training device is a bicycle training device comprising:~~

a frame (5) and a flywheel rotatably mounted in the frame;

a drive chain wheel (2) to be driven by a user by means of pedals, the drive chain wheel (2) being rotatably mounted to the frame (5);

a driven chain wheel (3), rotatably mounted to the frame (5) and coupled to the flywheel;

a coupling chain (4) engaging both chain wheels (2, 3) and having a first chain half (4C) and a second chain half (4D);

a tension difference measuring device (6) for providing an output measurement signal which is representative for the torque transmitted by the coupling chain (4);

wherein the tension difference measuring device (6) comprises:

a supporting arm (20) fixed with respect to the frame (5);

a chain-contacting sensor member (10), arranged within the span of the coupling chain (4) between the drive chain wheel (2) and the driven chain wheel (3), the sensor member (10) having a first contact face (11) in force-transmitting contact with an inner side of the first chain half (4C) such as to receive from the first chain half (4C) a first transverse force (F_{DC}) and having a second contact face (12) in force-transmitting contact with an inner side of the second chain half (4D) such as to receive from the second chain half (4D) a second transverse force (F_{DD}) so that the sensor member (10) is loaded with the force difference between the first and second transverse forces (F_{DC} , F_{DD}), the sensor member (10) being implemented as a wheel rotatably mounted to the supporting arm (20) such as to rotate along with the moving chain (4); and

a deformation measuring sensor (30) mounted to the supporting arm (20) for measuring a deformation of the supporting arm (20) as caused by a displacement of the chain-contacting sensor member (10), which in turn is caused by the force difference, the measuring sensor (30) providing an electric measurement signal (S_M) proportional to the deformation of the supporting arm (20), which measurement signal (S_M) is the output measurement signal of the tension difference measuring device (6).

21-36. (canceled)

37. (new) The bicycle of Claim 19, wherein the sensor member (10) has a circular outline.

38. (new) The bicycle of Claim 19, wherein the two chain wheels (2, 3) have mutually different diameters, so that the first chain half and the second chain half (4C, 4D) are not mutually parallel.

39. (new) The bicycle of Claim 19, wherein the center point of the sensor member (10) is substantially located in a plane (L) defined by the rotation axes of the drive chain wheel (2) and the driven chain wheel (3).

40. (new) The bicycle of Claim 39, and wherein a rotation axis of the sensor member (10) is directed substantially parallel to the rotation axes of the drive chain wheel (2) and the driven chain wheel (3).

41. (new) The bicycle of Claim 19, wherein the supporting arm (20) is directed substantially perpendicular with respect to a plane (L) defined by the rotation axes of the drive chain wheel (2) and the driven chain wheel (3), and wherein the deformation measuring sensor (30) measures a change in length of the supporting arm (20).

42. (new) The bicycle of Claim 19, wherein the supporting arm (20) is directed substantially perpendicular with respect to the plane defined by the coupling chain (4), and wherein the deformation measuring sensor (30) measures bending of the supporting arm (20).

43. (new) The bicycle of Claim 19, wherein the supporting arm (20) is attached to a wheel axle of the drive chain wheel (2) or the driven chain wheel (3).

44. (new) The bicycle of Claim 19, wherein the deformation measuring sensor (30) comprises one or more strain gauges.

45. (new) The bicycle of Claim 19, wherein at least the first and second contact faces (11, 12) of the sensor member (10) comprise sound production counteracting material.

46. (new) The training device of Claim 20, wherein the sensor member (10) has a circular outline.

47. (new) The training device of Claim 20, wherein the two chain wheels (2, 3) have mutually different diameters, so that the first chain half and the second chain half (4C, 4D) are not mutually parallel.

48. (new) The training device of Claim 20, wherein the center point of the sensor member (10) is substantially located in a plane (L) defined by the rotation axes of the drive chain wheel (2) and the driven chain wheel (3).

49. (new) The training device of Claim 48, and wherein a rotation axis of the sensor member (10) is directed substantially parallel to the rotation axes of the drive chain wheel (2) and the driven chain wheel (3).

50. (new) The training device of Claim 20, wherein the supporting arm (20) is directed substantially perpendicular with respect to a plane (L) defined by the rotation axes of the drive chain wheel (2) and the driven chain wheel (3), and wherein the deformation measuring sensor (30) measures a change in length of the supporting arm (20).

51. (new) The training device of Claim 20, wherein the supporting arm (20) is directed substantially perpendicular with respect to the plane defined by the coupling chain (4), and wherein the deformation measuring sensor (30) measures bending of the supporting arm (20).

52. (new) The training device of Claim 20, wherein the supporting arm (20) is attached to a wheel axle of the drive chain wheel (2) or the driven chain wheel (3).

53. (new) The training device of Claim 20, wherein the deformation measuring sensor (30) comprises one or more strain gauges.

54. (new) The training device of Claim 20, wherein at least the first and second contact

faces (11, 12) of the sensor member (10) comprise sound production counteracting material.